

# **The Devastating Effects of Environmental Degradation in the Niger Delta Region of Nigeria**

**By**

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## **Abstract**

In Nigeria, like many other developing nations, the resultant environmental problems are legion: The Niger Delta Region is known as an oil rich region and has so many environmental issues due to oil exploration and other human activities. The effects of oil in the fragile Niger Delta communities and environment have been enormous. Environmental degradation is the deterioration of the environment through depletion of resources such as air, water, and soil, the destruction of ecosystems and the extinction of wildlife.(Wikipedia, 2017) . This paper reviewed the environmental degradation issues in the region, the causes and effects on the people. It considered environmental issues such as pollution (air, water, noise), solid waste, oil spillage, global warming, ozone layer depletion, flooding, land degradation and the effects of human activities. The method for this review was by use of secondary data. Policy options for upgrading the degraded environment were also suggested.

**Key words:** Environment, Degradation, Pollution, Health, Niger Delta

## **1. Introduction**

The Niger Delta is located in the Atlantic Coast of Southern Nigeria and is the World's second largest region with a coastline of about 450km which ends at Imo river entrance (Awosika, 1995). The region is the largest wetland in Africa, having an area of 20,000square kilometers and among the third largest in the World (Anifowose, 2008; Chinweze, C. and Abiol-oloke, G., 2009). The region can be classified into four ecological zones: coastal inland zone, freshwater zone, lowland rainforest zone and mangrove swamp zone (FME, e'tal, 2006).

The environment is the complex of physical, chemical and biotic factors that acts upon an organism or an ecological community and ultimately determines its form and survival (Encyclopaedia Britannica, 2017).

Considering the human environment from the economic point, Odiette (1993) describes it as natural, capital and analogous to financial capital assets. In this case, any damage done to the environment runs down capital, which sooner or later reduces the value of its recurrent services

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water, and soil, the destruction of ecosystems and the extinction of wildlife.(Wikipedia, 2017). When the environment becomes less valuable or damaged, environmental degradation is said to occur. It can occur naturally, or through human processes. The largest areas of concern at present are the loss of rain forest, air pollution and smog, ozone depletion, and the destruction of the marine environment. Pollution is occurring all over the world and poisoning the planet's oceans. Even in remote areas, the effects of marine degradation are obvious. In some areas, the natural environment has been exposed to hazardous waste.

## **1.1 Aim and Objectives of the paper**

This paper is aimed at reviewing the impact of the changes on the people, plants and animals in the region. This is to achieve the following objectives

- i. Have an insight to what environmental degradation is.
- ii. Identify the factors responsible for environmental degradation in the region
- iii. Highlight its impact and implications on the health, and socio-economic well being of the people in the region.

## **1.2 The Study Area**

The Niger Delta region, comprises of the oil producing States of Nigeria and extends over about 70,000 km<sup>2</sup> and makes up 7.5% of Nigeria's land mass (Wikipedia, 2017) . The following States make up the Niger Delta region. These include: Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers



Figure 1.0: Map of the Niger Delta Region (Nigeria Echo, 2017)

## 2.0 REVIEW OF RELATED LITERATURE

Land degradation is one of the worst environmental problems experienced globally. Ukpong (1994) stated that the intensification of the use of fragile and marginal ecosystems has led to progressive degradation and continued desertification of marginal agricultural lands even in years of normal rainfall. It is feared that the damage by drought and population pressure may have resulted in the genetic loss of a vast array of valuable plant species. Pressure on the dwindling resources in the arid prone areas has caused a number of devastating socio-political and sectarian conflicts in the country with concomitant death, injury and heavy economic losses.

Another environmental problem is pollution. Mba (1996) identified the major sources of water pollution in Nigeria to include industrial plants, decomposed waste, solid mineral mining activities as well as petroleum mining operations. In his own view, Odiette (1994) identified water pollution sources as arising from soil erosion, the discharge of industrial and household effluence wastes (untreated) into the water bodies and the growth of water hyacinth. Okorie (1992) identified the distribution of unchecked gully erosion as a source of water pollution. According to him, gully erosion has destroyed extensive farmlands and projects under development.

In addition to the above discourse, another major environmental problem is flooding. According to the UNDP (1995), Lagos flooding arises from rivers and streams overflowing their banks. The occurrence is seasonal and is usually during and after the raining season. In some areas it is an annual occurrence. Rain fall has been identified as a primary causative factor for flooding. In addition, clay soils are more prone to flooding and many states in the Niger Delta region are liable to flooding.

### **3. Causes of Environmental Degradation in the Region**

#### **3.1 Human Activities on the Environment**

Human activities and the environment are inter-related. This is because any activity of man is done in the environment and the resultant effect is either positive or negative to man. Human activities are diverse. According to Uchegbu (1998), negative effects on man arise from these economic and domestic activities. For instance, agriculture requires pesticides that pollute the atmosphere or enter drainage system via run off and sewers. Other activities which lead to pollution include thermal power stations, burning of fossil fuels, exhaust fumes. All these emit harmful pollutants like sulphur dioxide, carbon monoxide, etc, that cause acid rain, global warming, and the malfunctioning of human haemoglobin, etc. Ukpong (1994) categorised human activities capable of causing environmental nuisance and the degradation as; destructive logging of forests, overgrazing and over-cropping of arable lands, strip mining etc. This may be extended to include oil exploitation, industrialization, improper disposal of domestic solid waste and human excretal including liquid waste, over-utilization of non-degradable materials for packaging among others.

The environment in which this human activity takes place is the outer physical and biological systems of the earth in which man and other organisms live. Canter (1975) categorized the environment into air, water, noise, biological, cultural and socio-economic environment. These views are all embracing; however, in a physical sense, Holderness and Lambert (1982) claim that the physical environment is made up of air, water, and land. Human activities impinge on the environment, which as noted earlier, may have either positive or negative effects on man.

#### **3.2 Global Warming**

This is the continued build-up of greenhouse gases in the atmosphere. These gases, which include carbon dioxide, methane, nitrous oxide and chlorofluorocarbons, block some of the

heat radiated from the earth to cause a greenhouse effect. According to the inter-government panel on climate change, the last two decades of the 20th century were the hottest on record (Wikipedia, 2017). Some of the major causes of increasing emissions of greenhouse gases are the burning of fossil fuels for energy and transport, the clearing of forest which reduces carbon dioxide absorption, cattle raising which produces methane emission as a by-product, and the use of technology that pollutes. Global warming leads to the rise in seawater level and to soil erosion, flooding and drought.

### 3.3 Ozone Layer Depletion

The ozone layer is basically found at a height of about 20 – 30km above sea level. The ozone layer provides a protective layer, which prevents the penetration of the sun harmful ultraviolet rays. The pollution of the atmosphere from the release of Chlorofluoro carbons (CFCS) gases causes the depletion of the ozone layers and this result in environmental degradation. Ukpong (1994), complained that most of the skin diseases and the low productivity in agriculture are caused by ultra- violet rays and that an increase in ultra-violet radiation affects water bodies, disturbs aquatic life, which supports the food chain, and causes the death of fishes that feed us. It also causes the deterioration of synthetic materials such as paints, and other products used in the building industry.

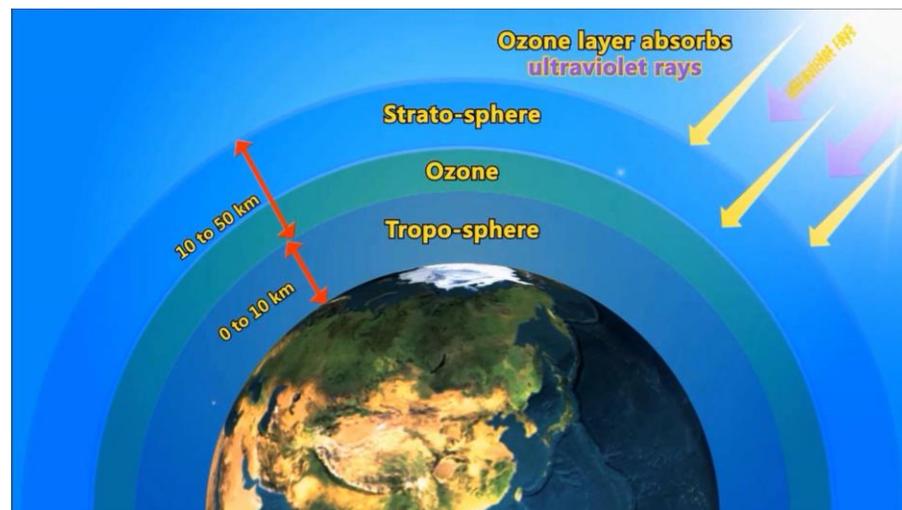


Figure 3.1. Image of the Ozone layer (Emaze.com)

### 3.4 Pollution

This phenomenon occurs whenever potentially harmful substances are released into the environment. Pollution on the whole is caused principally by human activities, though it can

also be a natural process. It is usually classed according to the receiving agents of air as emission, water as effluent and land as dumps and disposal (Ukpong, 1994). Pollution can be categorized into three major types: air pollution, water pollution and noise pollution.

### **3.4.1 Air Pollution**

Air pollution is the contamination of the air with unwanted gas, smokes, particles and other substances. Air pollution is also considered as waste remaining from the ways we produce goods and generates energy to heat our environment. According to the World Bank Report (1980), air pollution is the presence in the outdoor atmosphere of one or more contaminants such as dust, fumes, gas, midst, odour, smoke or vapour in such quantities, characteristics and duration as to make them actually harmful or potentially injurious to human, plant or animal life or property, or which unreasonably interfere with the comfortable enjoyment of life and property.

Environmental air pollution arises from people economic and domestic activities such as modern agriculture, which requires pesticides that pollute the atmosphere or enter water systems via run-off and sewage. Industrial activities are responsible for a wide range of pollution. Thermal power stations, burning fossil fuel and moving vehicles emit harmful pollutants like sulphur dioxides, nitrogen oxide and carbon dioxide that cause acid rain, global warming and malfunctioning of human / animal's haemoglobin's.

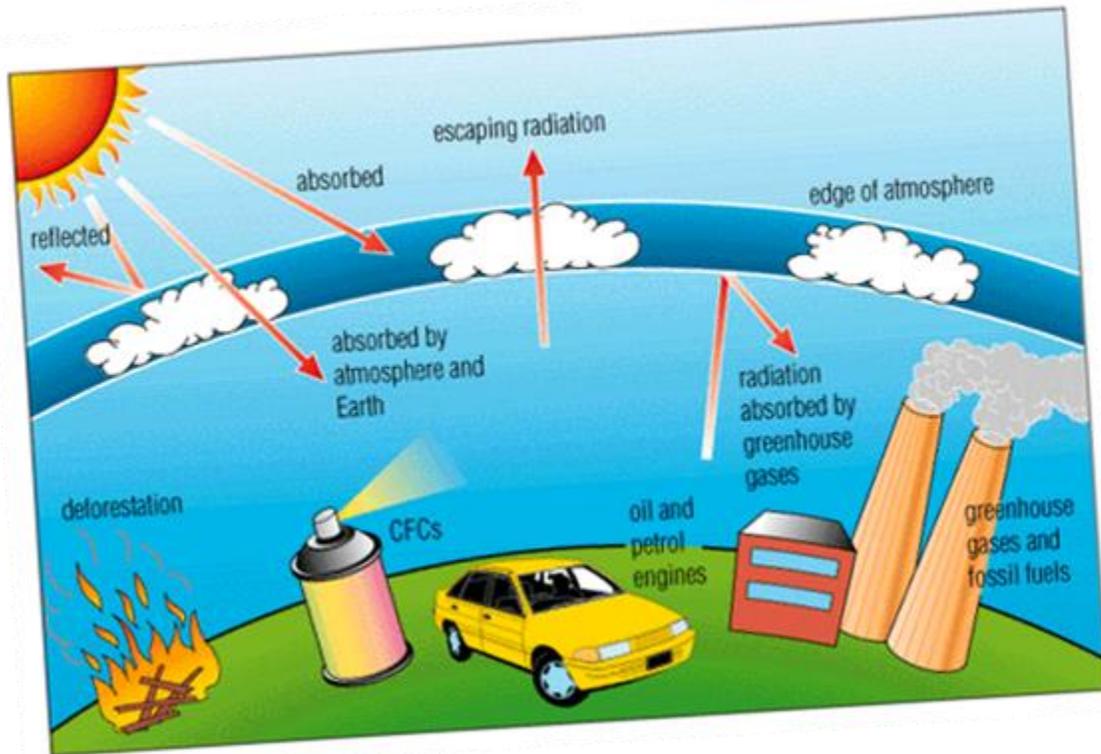


Figure 3.2. Image of some sources of air pollution (Ankit J., 2015)

### 3.4.2 Water Pollution

Water pollution almost always means that some damage has been done to an ocean, river, lake, or other water sources to such an extent that they cause problems for animals or people. We know that pollution is human problem, as industrialization spread around the globe, so the problem of pollution has spread with it. The Niger Delta due to its oil and gas activities has caused serious pollution to its water ranging from oil spill, chemical substances, etc.

Oil facilities and operations are located in key ecological areas, including important fishing grounds, mangroves and tropical rainforest. These areas are often heavily damaged by the oil leaks. Drinking water is polluted, people become ill and farmers lose their income because they can no longer cultivate the soil. More gas is flared in Nigeria than anywhere else in the world. The flaring produces acid rain in the Niger Delta, which is harmful to vegetation and crops. The smoke released is damaging to people who live nearby such a flare. The flares affect their livelihood and expose them to an increased risk of premature deaths, child respiratory illnesses, asthma and cancer.

There are periodic incidences of oil spillage in the Niger Delta. Not only does oil spillage cause consequences similar to those caused by gas flaring, but it has caused the instant death of the fish and wildlife population, and also the instant death of human population caused by explosion and fire, as a result of the spillage. The spillages are a regular feature of life in the Delta. They are rarely dealt with promptly. In some cases, minor leaks are left for months, resulting in major pollution. This oil spillage has implications for marine life and coastal vegetation. In some cases, the ground water supply of the local inhabitants becomes polluted. The chemical compound from industrial polluted areas causes respiratory and chromosome damage in women. Moreover, it causes still births and cancer in women (Uchegbu, 2002). This is because women use the polluted water for washing and laundry activities and other economic activities within the vicinity of oil polluted areas.

### **3.4.3 Noise Pollution**

Noise is most often defined as unwanted sound. Noise is usually measured in decibels (dB) and is generated mostly in high-density urban areas or even in the industrial areas that usually use industrial plants as their sources of energy.

### **3.5 Flooding**

Flooding occurs throughout Nigeria in three main forms: coastal flooding, river flooding, and urban flooding. Coastal flooding occurs in the low-lying belt of mangrove and fresh water swamps along the coast. River flooding occurs in the flood plains of the larger rivers, while sudden, short-lived flash floods are associated with rivers in the inland areas where sudden heavy rains can change them into destructive torrents within a short period. Urban flooding occur in towns located on flat or low lying terrain especially where little or no provision has been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is a phenomenon of every rainy session in Lagos, Maiduguri, Aba, Warri, Benin and Ibadan. Every rainy season, wind gusts arising from tropical storms claim lives and properties in the region. Flash floods from torrential rains wash away thousands of hectares of farmland.



Figure 3.3: Images of Flooding in Benin City, (Vanguard, 2012)

### 3.5.1 Solid Waste

Solid waste means any garbage, refuse, sludge from a waste water treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials including solid, liquid, semi-solid, or contained gaseous material, resulting from industrial, commercial, mining and agricultural operations, and from community activities. Solid waste has become the number one serious environmental problem facing the country with its consequent effects on the pollution of water, air and land, not to mention its hazards to women's health and their social well-being (Uchegbu 2002). The problem of solid waste in our urban rural areas can be said to be a recent development. The oil boom era with its high pace of consumption and population opened the floodgate for serious waste generation. At the moment, virtually all our major cities and towns across the country are faced with the problems of solid waste management. These heaps limit the roads to single narrow lanes, resulting in perennial traffic jams as well as the production of offensive odour.

### 3.6 Land Degradation

Land degradation is one of the worst environmental problems facing many people in the region. The intensification of the use of fragile and marginal ecosystems has led to progressive degradation and continued desertification of marginal agricultural lands even in years of normal rainfall. It is feared that the damage by drought and population pressure may have resulted in the genetic loss of a vast array of valuable plant species. Pressure on the dwindling resources in the arid prone areas has caused in a number of devastating socio-political and sectarian conflicts in the region with concomitant death, injury and heavy economic losses. Some of the causes of land degradation as noted by

(Ukpong, 1994) includes; improper resources management, destructive logging of our forest, overgrazing and over, cropping of arable lands, flooding, wind erosion etc. He also identified other indirect causes of land degradation to include population growth and population influx, property ownership issues, lack of control, enforcement measures and jurisdictional overlap which are due to lack of authority and the use of inappropriate technology for farming and even for producing manufactured goods.



Figure 3.4: Images of land degradation ( Koniuszewski, 2014)

#### **4. Effects of environmental degradation on living and non living things**

##### **4.1 Environmental Degradation**

The effects of environmental degradation are enormous on any living and non-living thing in the environment for example, human, wild life, plants, and buildings and so on. In Nigeria, like in many developing nations, the resultant environmental problems are legion: aggravated soil erosion, flood disasters, salinization or alkalization, and desertification due to the effects of shifting agriculture on fragile soils, forest clearing in erosion prone and flood prone areas, bush burning, animal over-grazing and poor, construction and maintenance of roads and irrigation system; pollution of water, air and land due to improper disposal of domestic and industrial waste; pollution through oil spillage; pollution from noise; proliferation of slums in urban areas, unsanitary and unsafe housing; congestion of traffic houses in urban area and lack of open space for active outdoor recreation. All these affect human well-being especially

the health and socio-economic well-being of women in Nigeria in particular and the world as a whole.

#### **4.1.1 Human Being**

Ozone depletion can cause eye and skin ailments. This is due to the adverse effects of Ultra Violet (UV) radiation. The eye is exposed directly to sunlight and this can result in acute or long-term damage. The skin is also exposed directly to solar UVR, and the development of skin cancer is the main adverse health outcome of excessive UVR exposure (Norval e'tal, 2007)

Sulphur dioxide, acts as a pungent suffocating irritant gas on the upper respiratory tract under moderate exposure, which could lead to the damage of the respiratory system. These sulphur compounds also affect visibility, reduction of sunlight, unpleasant smells, irritation and smarting in the eyes, nose and throat. Air pollution could degrade the environment, contribute to an increase in hospital admission, lead to absence from work and school and increase in mortality rate.

#### **4.1.2 Plants**

Ozone depletion disturbed plant life-cycles. Gaseous pollutants such, as sulphur dioxide enter the plant via the stomata in the course of their normal respiration leading to the destruction of the photosynthetic activity of the plant. Damage to plants ranges from collapse of the leaf tissues, bleaching or colour changes, and reduction in growth rate to the complete death of the plant. Other gaseous pollutants responsible for these damages include chlorine, hydrogen chloride, ammonia and mercury. All these gaseous pollutants that attack vegetations are known as photoxicants.

#### **4.1.3 Animals**

Ozone depletion destroys marine life. An animal's health may be in danger when the animal feeds on plants covered by toxic particles such as fluorine. Fluorine

#### **4.1.4 Pollution on Materials**

Air pollution affects materials by the soiling of building surfaces, clothing and structures. The sulphuric acid present in the air is mostly responsible for the attack on the cloth material or

fabric, which leads to bleaching and discoloration. Hydrogen sulphide corrodes materials such as paints, electrical contacts and textiles.

## 5. CONCLUSION / RECOMMENDATIONS

It is quite obvious as exemplified above that the communities in the Niger Delta region have become the recipient of environmental degradation. Government failure to implement appropriate policies to ameliorate the devastated region has exacerbated the phenomenon. Therefore a comprehensive or holistic approach is necessary to address the social and economic predicaments of the people living in the Niger Delta region. In this context the following measures are recommended.

- i. To reduce the effect of the depletion of the ozone layer, we should buy/ produce fuel-efficient vehicles, reduce vehicle use and have a maintenance culture on vehicles.
- ii. We should increase the use of solar power as well as improve energy -efficiency in buildings
- iii. Decrease deforestation and plant forests.
- iv. Develop carbon capture and storage processes and improve soil carbon management strategies
- v. There is a need to seriously carry out a general policy implementation on environmental sanitation, by increasing environmental sanitation practice and encourage proper waste disposal.
- vi. Joint Community-Government participation is encouraged to harness all the points mentioned above.

## References

- Adeniyi E.O. (1986). *Environmental Management and Development in Nigeria*. Proceedings of National Conference on Development and the Environment, Rosprint Industrial Press Ltd.
- Anifowose, B. (2008). Assessing the Impact of oil and gas Transport on Nigeria's Environment. U21 Postgraduate Research Conference Proceedings 1, University of Birmingham UK.
- Ankit J. (2015). *Ozone Layer Depletion – Causes, Effects and Solutions*. Retrieved April 10, 2017 From World Wide Web:<http://www.7continents5oceans.com/ozone-layer-depletion-causes-effects-and-solutions>
- Awosika, L.F. (1995). Impacts of global Climate Change and Sea level rise on coastal resources and energy development in Nigeria. Impact on Energy Development. DAMTECH Nigeria limited, Nigeria.

- Canter L.W. (1975). *Environment Impact Assessment*. McGraw Hill New York.
- Chinweze, C. and Abiol-Oloke, G. (2009). Women issues, Poverty and Social Challengers of Climate changes in the Nigerian Niger Delta Context. 7<sup>th</sup> International Conference on The Human Dimension of Global Environmental changes UN, Campus, Bonne, Germany
- Federal Ministry of Environment Abuja, Nigerian Conservation Foundation Lagos, WWF UK and CEESP. IUCN Commission on Environmental, Economic, and Social Policy May 31, (2006). Niger Delta Resource Damage Assessment and Restoration Project.
- Holderness, A. and Lambert J. (1982). *A new Certificate Chemistry*, Ibadan: Heinemann Educational Books Nig. Ltd.
- <http://www.britannica.com/science/environment>. Retrieved April 8, 2017.
- [https://en.wikipedia.org/wiki/2017Environmental\\_degradation](https://en.wikipedia.org/wiki/2017Environmental_degradation). Retrieved April 8.
- Koniuszewski A. (2014). *Caux dialogue on land degradation*. Retrieved April 11, 2017 from World Wide Web. <https://adamkoniuszewski.com/2014/07/10/2014-caux-dialogue-on-land-degradation/>
- Mba H.C. (1996). *Towards more Environment Conscious Development Policies in 21st Century Nigeria*. Proceedings of the 27th Annual Conference of the Nigeria Institute of Town Planners, Benin, Edo State.
- Nigerian Echo (2017). *Ex-militants leaders vowed to fight Niger Delta enemies*. Retrieved April 10, from World Wide Web: <http://www.nigerianecho.com/ex-militant-leaders-vowed-to-fight-enemies-of-niger-delta/>
- Norval M, e'tal.(2007). *The effects on human health from stratospheric ozone depletion and its interactions with climate change*. Photochem Photobil Sci. 2007 Mar,6(3): pg 232-251. Epub
- Odiette, W.O. (1993). *Environmental Impact Assessment for Sustainable Development*. Environmental News, October – December.
- Okorie T.G (1992). *Strategies of Environmental Risk Management in Nigeria*, Global Advanced Research Journal of Management and Business Studies) Vol. 3(1) pp. 011-015. Retrieved April 10, 2017 from World Wide Web. <http://garj.org/garjmbms/index.htm>
- Report on *Climate Change in Niger Delta* (2017). Community Research and Development Centre (CREDC). Retrieved April 10, from World Wide Web. <http://www.global-greenhouse-warming.com/climate-change-in-Niger-Delta.html>
- Uchegbu S.N.(1988). *Environmental Management and Protection*, Spotlight Publishers, Nigeria.
- Uchegbu S.N.(2002). *Environmental Management and Protection*, Precision Printers and

Publishers, Nigeria.

Ukpong S.J. (1994). *Global and Nigerian Environment Problem analysis SIRF*.

UNDP (1995). *Baseline Report on Flooding and Erosion, Land slide in Anambra, Enugu Kogi , and Lagos State*.

Vanguard Nigeria (2012). *Rage of nature flood ravages communities across Nigeria*. Retrieved April 10, 2017 from World Wide Web: <http://www.vanguardngr.com/2012/10/rage-of-nature-flood->

World Bank Report (1980). *Water Supply and Waste Disposal, Poverty and Basic Needs Series*, Sept.